

# Title: Sun Elevation Angle Experiment

**Question:** How does the sun's angle of elevation change with latitude?

**Independent Variable (IV):** measurements at different latitudes

**Dependent Variable (DV):** sun's angle

**Hypothesis:** As the latitude increases, the sun's angle will \_\_\_\_\_.  
(sketch a graph showing your expectation)

## Materials:

- 2 rulers
- plumb bob
- graph paper
- protractor
- computer with Internet access
- schools at different latitudes

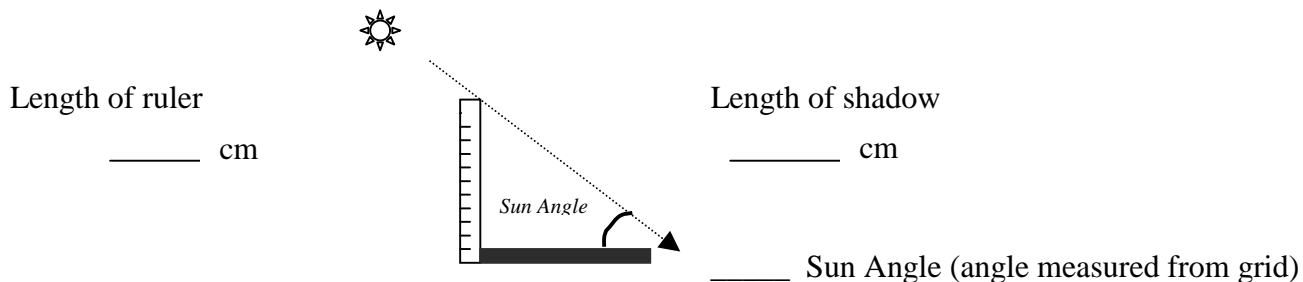
**Procedure:** (for complete directions: <http://asd-www.larc.nasa.gov/SCOOL/sun-earth-act.html>)

1. On one sunny day (April 23-27) at noon go out to make your measurements.
2. Place ruler perpendicular to ground in a sunny area. *To make sure it is vertical you can use a plumb bob constructed with a string and a weight.*
3. Measure and record the length of the shadow in centimeters.
4. Use the measurement of the shadow and of the ruler to measure the sun's angle on graph paper.

**Data:** Measurements and angle from your school's location at noon.

School latitude \_\_\_\_\_

Date \_\_\_\_\_



**Use the data to help answer the experiment question.** Create a graph plotting your latitude and sun angle as well as several other schools' data from a range of latitudes. (All data will be in on April 27.)  
*The Sun-Earth data table can be found at <http://asd-www.larc.nasa.gov/SCOOL/sun-earth-obser.cfm>*

**Conclusion:** My hypothesis was \_\_\_\_\_.  
(correct / incorrect)

We conclude from the data, as the latitude \_\_\_\_\_, the sun's angle will \_\_\_\_\_.  
Now consider whether the pattern is the same in all seasons.

Answer the experiment question in your own words and explain what you learned from this experiment.  
What new questions could you explore now?